

REMARKS

Reconsideration of this application is respectfully requested.

Upon entry of the foregoing amendments, claims 1-6 and 8-22 are pending in the application, with claims 1 and 11 being the independent claims. Claims 1-3 and 11 are sought to be amended, and claim 7 is sought to be canceled. These changes are believed to add no new matter, and their entry is respectfully requested.

Based on the above amendments and the following remarks, Applicant respectfully requests that the Examiner reconsider all outstanding objections and rejections and that they be withdrawn.

Rejections Under 35 USC Sec. 112, 2nd Paragraph

In amended claim 1, the preamble recites “a tree,” which provides antecedent basis for “the tree” recited in step (a).

Also, in both original and amended claim 1, step (c) recites “*an* observed quality factor,” which provides antecedent basis for “*the* observed quality factor” recited in step (d).

Claim 11 is directed to a tree probe apparatus. Thus, the preamble of claim 11 properly recites “a tree probe.” Subsequently, claim 11 properly recites elements of the tree probe, including a vibrative member and means elements. There is no legal requirement that Claim 11 must recite “probing a tree,” as argued by the Examiner. However, for the sake of clarity, element (b) of amended claim 11 recites that the end portion of the vibrative member is embedded in a tree.

Prior Art Rejections

The claim rejections listed in paragraphs 2-3 of the Office Action are now traversed.

Claim 7 is canceled, thereby rendering moot its rejection.

The inventions recited in amended claims 1 and 11 are patentable over all of the applied references. For at least all of the reasons advanced below, the inventions of amended claims 1 and 11 are neither taught nor suggested by any of the applied references either alone or in combination.

Discussion of the Present Invention

The viscoelastic properties of the wood of a tree are indicative of the maturity of the tree. Also, the viscoelastic properties of the tree affect the vibrational dampening, and thus Q factor, of a vibrating member embedded in the tree. It follows that the measured Q factor of the embedded vibrating member is indicative of the maturity of the tree. See, e.g., the present application, at paragraphs [0011] and [0015]. The present inventor recognized the foregoing connections in arriving at the present inventions as recited, for example, in amended claims 1 and 11.

The method of amended claim 1 includes mechanically vibrating the vibrative member at or near its own resonance frequency, determining the resonance bandwidth of the vibrative member, and calculating a Q factor of the vibrative member based on its resonance frequency and bandwidth. Amended claim 11 recites similar features. Thus, the present inventions as recited in amended claims 1 and 11 are concerned with the mechanical resonance and Q *of the embedded vibrating member itself*, as opposed to the resonances and bandwidths (and thus, Q) of *acoustic waves propagating in wood*, which are the focus of the prior art.

Arseneva (SU-178114)

Arseneva neither discloses nor suggests the features of amended claims 1 and 11. Arseneva is directed to a non-contact technique of monitoring wood using *electromagnetic* stimulus or vibrations to determine electroconductivity.

In stark contrast, the invention of amended claim 1 includes embedding a vibrative member in the tree, mechanically vibrating the member *at or near its resonance frequency*, and calculating the (mechanical) Q factor of the member. Amended claim 11 recites similar features, in apparatus form. Arsevena does not disclose or even remotely suggest these claimed features individually, let alone in combination. Applicant respectfully submits that Arseneva has little or no relevance to the inventions as recited in amended claims 1 and 11.

Dunlop (U.S. Patent 4,399,701)

Dunlop neither discloses nor suggests the features of amended claims 1 and 11. Dunlop discloses “[a] method of detecting degradation in wood articles comprising the steps of applying *acoustic waves along the wood grain*, and measuring band widths and

frequencies *of the acoustic or standing wave resonances in said articles* . . . “. Dunlop, Claim 1; and Col. 1, Lines 25-29.

Unlike Dunlop, the inventions of amended claims 1 and 11 are not concerned with measuring *acoustic or standing wave resonances in the wood article*. Instead, the inventions of amended claims 1 and 11 measure the Q value of the embedded vibrative member itself. For example, amended claim 1 recites in part:

- c) determining the resonance properties of the *vibrative member, including the vibrative member resonance frequency and bandwidth*;
- d) calculating an observed *quality factor associated with of the vibrative member vibrations based on the determined vibrative member resonance frequency and bandwidth*; . . . (italics added).

Shaw (U.S. Patent 4,059,988)

The system disclosed in Shaw impacts a pole at a fixed first frequency (e.g., 40 Hz) so as to inject “white sound” into the pole, and then measures amplitudes of vibrational energy at higher frequencies opposite the point of injection. Like Dunlop, Shaw is concerned with the resonances of acoustic waves or frequencies propagating in the pole.

In contrast, as mentioned above, the inventions recited in amended claims 1 and 11 determine the resonance properties of the *vibrative member itself*, and calculate an observed *quality factor of the vibrative member*.

None of the applied references discloses or suggests, individually or in combination with any of the other references, the combination of features recited in amended claims 1 and 11. The applied references do not even mention the Q factor of the embedded vibratory member (Neither Dunlop nor Arseneva discloses or suggests an embedded vibrative member). The applied references do not disclose or suggest vibrating the vibrative member at or near (or about) its resonance frequency, or determining a Q factor of a vibrative member embedded in a tree as recited in amended claims 1 and 11. None of the applied references recognizes that a tree may be selected based on the Q factor of the embedded vibrative member, as recited in amended claim 1.


All of the claims depending from amended parent claims 1 and 11 are allowable for at least all of the same reasons the respective parent claim is allowable.

Claims 10 and 14 are patentable on their own merits because the applied references fail to disclose or suggest, either alone or in combination, a vibrative member having two prongs, "wherein the two prongs are each characterized by a different resonant frequency."

Conclusion

On the basis of the above amendments and remarks, reconsideration and allowance of this application is believed warranted. If the Examiner believes, for any reason, that personal communication will expedite prosecution, the Examiner is invited to telephone the undersigned at the number provided.

Respectfully Submitted,



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